Docket No. AB-145U

Amendments to and Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (currently amended): A method of preventing diabetes or treating patients with diabetes, comprising:

implanting at least one system control unit in at least one of the skull and the brain of the patient, wherein the at least one unit controls the delivery of at least one stimulus to at least one area of the brain affecting diabetes;

applying the at least one stimulus to the at least one area of the brain that exhibits chronic abnormal activity, in order to prevent or treat diabetes,

wherein the area is selected from at least one of ~~the arcuate nucleus, the paraventricular nucleus, the dorsomedial nucleus, the lateral hypothalamic area, the ventromedial nucleus,~~ the dorsal motor nucleus of the vagus nerve, and the nucleus of the solitary tract.

Claim 2 (original): The method of Claim 1 wherein the at least one system control unit is connected to at least two electrodes, and wherein the stimulus comprises electrical stimulation delivered via the at least two electrodes.

Claim 3 (original): The method of Claim 1 wherein the at least one system control unit is connected to at least one pump and at least one infusion outlet, and wherein the stimulus comprises stimulation via one or more drugs delivered from the at least one pump through the at least one outlet.

Claims 4 -14 (canceled)

Claim 15 (original): The method of Claim 1 wherein the stimulus is at least one stimulating drug.

Claim 16 (original): The method of Claim 1 wherein the stimulus is electrical stimulation.

Claim 17 (original): The method of Claim 1 wherein the stimulus is electrical stimulation and at least one stimulating drug.

Claim 18 (original): The method of Claim 1 further comprising applying the stimulus in coordination with delivery of a medication.

Claim 19 (original): The method of Claim 1 further comprising sensing at least one condition and using the at least one sensed condition to automatically determine the stimulus to apply.

Claim 20 (original): The method of Claim 1 further comprising implanting more than one system control unit.

Claim 21 (original): The method of Claim 1 wherein implanting at least one system control unit comprises implanting at least one microstimulator.

Claim 22 (currently amended): A method of preventing metabolic disorders or treating patients with metabolic disorders, comprising:

implanting at least one system control unit in at least one of the skull and the brain of the patient, wherein the at least one unit controls the delivery of at least one stimulus to at least one area of the brain affecting a metabolic disorder;

applying the at least one stimulus to the at least one area of the brain that exhibits chronic abnormal activity, in order to prevent or treat the metabolic disorder,

wherein the area is selected from at least one of ~~the arcuate nucleus, the paraventricular nucleus, the dorsomedial nucleus, the lateral hypothalamic area, the ventromedial nucleus,~~ the dorsal motor nucleus of the vagus nerve, and the nucleus of the solitary tract.

Claim 23 (currently amended): ~~A system for preventing diabetes or for treating patients with diabetes,~~ The method of Claim 22, further comprising:

~~at least one system control unit configured to be implanted in at least one of the skull and the brain of the patient, wherein the at least one unit controls the delivery of at least one stimulus to at least one area of the brain affecting diabetes; and~~

~~at least one sensor in communication with the at least one system control unit and configured to sense~~ sensing at least one condition indicating a need for said at least one stimulus in order to treat or prevent ~~diabetes~~ metabolic disorder;

wherein the at least one sensed condition is at least one of electrical activity of the brain, nerve activity, muscle activity, body mass, impedance, pH, neurotransmitter level, neurotransmitter breakdown product level, hormone level, ketone level, glucose level, electrolyte level, enzyme level, cytokine level, medication level, other drug level, and level of any other bloodborne substance.

Claim 24 (currently amended): The ~~system~~ method of Claim 23 wherein the at least one sensed condition is the level of one or more of Neuropeptide Y (NPY), serotonin, one or more catecholamines, adrenocorticotrophic hormone (ACTH), luteinizing hormone (LH), follicle-stimulating hormone (FSH), growth hormone (GH), thyroid stimulating hormone (TSH), leptin, ghrelin, AGRP, orexin-A, orexin-B, cholecystokinin (CCK), glucagon, and glucocorticoids.

Claim 25 (currently amended): The ~~system~~ method of Claim 23 wherein the at least one system control unit is configured to use the sensed condition to control the delivery of the at least one stimulus.

Claim 26 (currently amended): The ~~system~~ method of Claim ~~23 further comprising~~ 22 wherein implanting the at least one system control unit further comprises:

implanting at least one pump, the pump having:~~[[:]]~~

_____at least one infusion outlet; and

_____fluid connections connecting the at least one pump to the at least one infusion outlet; and

wherein ~~the system is configured to deliver~~ the at least one stimulus [[as]] is at least one stimulating drug delivered to the at least one area of the brain in order to treat or prevent ~~diabetes~~ metabolic disorders.

Claim 27 (currently amended): The ~~system~~ method of Claim 26 wherein the at least one pump and the at least one infusion outlet are further configured to deliver a liquid that increases excitement of the at least one area of the brain that exhibits chronic decreased activity; and

wherein the at least one area of the brain is at least one of ~~the paraventricular nucleus, the ventromedial nucleus,~~ the nucleus of the solitary tract, and the dorsal motor nucleus of the vagus nerve.

Claim 28 (currently amended): The ~~system~~ method of Claim 27 wherein the at least one pump and the at least one infusion outlet are further configured to deliver at least one of an excitatory neurotransmitter agonist, a medication that increases levels of at least one excitatory neurotransmitter, an excitatory hormone agonist, an inhibitory neurotransmitter antagonist, an inhibitory hormone antagonist, corticotropin releasing factor, a corticotropin releasing factor agonist, bombesin, a bombesin agonist, glucagon-like peptide 1, a glucagon-like peptide 1 agonist, serotonin, a serotonin agonist, leptin, a leptin agonist, a ghrelin antagonist, an AGRP antagonist, an MC4-R agonist, an MC3-R agonist, an orexin-A antagonist, an orexin-B antagonist, an OX1R antagonist, an OX2R antagonist, cholecystokinin, and a cholecystokinin agonist.

Claim 29 (currently amended): The ~~system~~ method of Claim 26 wherein the at least one pump and the at least one infusion outlet are further configured to deliver a liquid that decreases excitement of the at least one area of the brain that exhibits chronic increased activity~~; and~~

~~wherein the at least one area of the brain is at least one of the arcuate nucleus and the lateral hypothalamic area~~.

Claim 30 (currently amended): The ~~system~~ method of Claim 29 wherein the at least one pump and the at least one infusion outlet are further configured to deliver at least one of an inhibitory neurotransmitter agonist, a medication that increases the level of an inhibitory neurotransmitter,

an inhibitory hormone agonist, an excitatory neurotransmitter antagonist, and/or an excitatory hormone antagonist.

Claim 31 (currently amended): The ~~system~~ method of Claim ~~23 further comprising~~ 22 wherein implanting the at least one system control unit further comprises:

implanting at least two electrodes configured to apply electrical stimulation to the at least one area of the brain in order to prevent or treat ~~diabetes~~ metabolic disorders; and

~~electrical connections~~ connecting the at least one system control unit to the at least two electrodes, [[and]] through which the electrical stimulation is delivered to the at least one area adjacent to the electrodes.

Claim 32 (currently amended): The ~~system~~ method of Claim 31 wherein the at least one system control unit is further configured to control the delivery of electrical stimulation pulses at less than about 100 to 150 Hz; and

wherein the at least one area of the brain is at least one of ~~the paraventricular nucleus, the ventromedial nucleus,~~ the nucleus of the solitary tract, and the dorsal motor nucleus of the vagus nerve.

Claim 33 (currently amended): The ~~system~~ method of Claim 31 wherein the at least one system control unit is further configured to control the delivery of electrical stimulation pulses at greater than about 100 to 150 Hz~~; and~~

~~wherein the at least one area of the brain is at least one of the arcuate nucleus and the lateral hypothalamic area~~.

Claim 34 (currently amended): The ~~system~~ method of Claim [[23]] 22 wherein the at least one system control unit is configured to conform to the profile of the skull.

Claim 35 (currently amended): The ~~system~~ method of Claim [[23]] 22 wherein the at least one system control unit is at least one microstimulator.